

Application No: 10/699,039

REMARKS

Claims 1-26 are pending. By this Amendment, claims 3, 10, 17, 23 and 25 are amended. Claim 3, 10, 17, and 25 are amended to correct a typographical error and their amendments are not intended to limit their scope. Claim 23 is amended to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The amendment of claim 23 is supported by the specification, for example, Compounds (2) and (3) at page 20, lines 9-10. No new matter is added by this amendment. Applicants respectfully request reconsideration of the pending rejections based on the following comments.

Affirmation of Restriction Election

Applicant reaffirms election of Group 1, claims 1-14 and 23-25. Claims 15-22 were withdrawn from further consideration by the Examiner as being drawn to a non-elected invention. However, the Examiner has rejoined and examined claims 15-22 for patentability under 37 CFR 1.104. The Examiner further noted that the restriction requirement previously made in the Office Action of November 1, 2004 has been withdrawn by the Examiner.

Abstract Objection

The abstract of the disclosure was objected to because it was not limited to a single paragraph. The second paragraph of the abstract is deleted, as shown in the Amendment to the Specification section. After the amendment, only one single paragraph remains in the abstract section.

In view of the above comments, Applicants respectfully request withdrawal of the objection to the abstract of the disclosure.

Disclosure Informality Objections

The disclosure was objected to because of the following informalities: (1) the trademarks and registered marks at pages 10-13 were not capitalized; and (2) there is typographic error at page 25, line 16 where "repeatedwith" should be -- repeated with --. All the trademarks and registered marks at pages 10-13 are capitalized, as shown in the Amendment to the

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Specification section. The typographic error at page 25, line 16 is corrected from "repeatedwith" to -- repeated with --, as shown in the Amendment to the Specification section.

In view of the above comments, Applicants respectfully request withdrawal of the objection to the disclosure.

Improper Antecedent Basis Objection

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. The Examiner noted that the recitation "X is CH_2CH_2 " in claims 2, 9, 16, and 24 and the recitation "V is $-\text{O}-\text{CH}=\text{CH}_2$ " in claims 3, 10, 17, and 25 lack antecedent basis in the specification. The paragraph at page 3, lines 28-29 in the Summary of the Invention section is amended as follows:

In a fourth aspect, the invention features a charge transport material having the general formula above. In some embodiments of interest, X of the general formula above is a linking group having the formula $-(\text{CH}_2)_2-$. In other embodiments of interest, the vinyl ether group V of the general formula above is $-\text{O}-\text{CH}=\text{CH}_2$.

The amendment is supported by claims 2, 3, 9, 10, 16, 17, 24, and 25 and by the specification, for example, Compound (2) and Compound (3) at page 20, lines 9-10. After the amendment, the specification provides proper antecedent basis for the recitation "X is CH_2CH_2 " in claims 2, 9, 16, and 24 and the recitation "V is $-\text{O}-\text{CH}=\text{CH}_2$ " in claims 3, 10, 17, and 25.

In view of the above comments, Applicants respectfully request withdrawal of the objection to the specification.

Claim Informality Objections

Claims 3, 10, 17, and 25 were objected to because of claim informalities. The Examiner noted that claims 3, 10, 17, and 25 incorrectly add an additional hydrogen atom in the chemical moiety " $\text{O}-\underline{\text{CH}_2}=\text{CH}_2$." (emphasis added) The chemical moiety " $\text{O}-\text{CH}_2=\text{CH}_2$ " in claims 3, 10, 17, and 25 is changed to " $\text{O}-\text{CH}=\text{CH}_2$."

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In view of the above comments, Applicants respectfully request withdrawal of the objection to claims 3, 10, 17, and 25.

Claim Rejections under 35 U.S.C. § 102

Claim 23 was rejected under 35 U.S.C. § 102(b) as being anticipated by Kikuchi (U.S. Pat. No. 6,416,915). The Examiner noted that Kikuchi discloses the hole transport hydrazone Compound 242 at cols. 81-82 which comprises two $-O-CH_2-CH=CH_2$ groups. The Examiner asserted that Compound 242 is within the compositional limitation of the formula recited in instant claim 23 because, *inter alia*, the group $-O-CH_2-CH=CH_2$ meets the definition of the term "a vinyl ether group" recited in the original claim 23. Applicants respectfully submitted that the group $-O-CH_2-CH=CH_2$ is an allyl ether group and not a vinyl ether group.

The distinction between an allyl group and a vinyl group is known by a person skill in the chemical art. For example, the group $-CH_2-CH=CH_2$ and $-CH=CH_2$ are known as allyl group and vinyl group respectively under IUPAC (INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY) common name nomenclature. Please see IUPAC website at <http://www.chem.qmul.ac.uk/iupac/ions/app.html#listA>. Furthermore, at col. 8, line 50 to col. 9, line 19 of the U.S. Patent No. 5,973,081, the terms "allyl ether group" and "vinyl ether group" are implied for formulae $-O-CH_2-CH=CH_2$ and $-O-CH=CH_2$ respectively.

Some other non-limiting examples of reference reciting the term "vinyl ether group" include U.S. Patent Nos. No. 6,767,980, 5,973,081, 5,972,925, 5,965,319, 5,962,449, and 5,952,352, and the article by Awwal et al., "Acid-Catalysed Hydrolysis of the Vinyl Ether Group of 4-Methoxy-1,2-dihydronaphthalene. Effect of Conformation on Reactivity," ARKIVO2002(iv), pp. 12-17. In Awwal et al., at page 13, lines 3-6, a compound having the formula $R-O-CH=CH_2$ is described as a compound having a vinyl ether group ($-O-CH=CH_2$) and an R group. The abstract of U.S. Patent No. 6,767,980 discloses a vinyl ether group-containing (meth)acrylic ester having the formula $CH_2=CR_1-COO-R_2-O-CH=CH_2$ where R_1 is hydrogen or methyl, R_2 is an organic residue, and R_3 is hydrogen or an organic residue. Because $CH_2=CR_1-COO$ is a (meth)acrylic group, $-O-CH=CH_2$ is the vinyl ether group.

Some other non-limiting examples of reference reciting the term "allyl ether group" include U.S. Patent Nos. 4,091,052, 4,740,330, and 5,578,686. At col. 4, lines 46-60 of

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the U.S. Patent No. 4,091,052, , a compound having the formula $R_1-O-CH_2-CH=CH_2$ is described as a compound having an allyl ether group $-O-CH_2-CH=CH_2$ and an organic residue R_1 . U.S. Patent No. 4,740,330 discloses at col. 1, lines 34-47 that by reacting an allyl halide with an alkali metal salt of an aromatic hydroxyl-containing material, the aromatic hydroxyl group can be converted to an allyl ether group. This implies that allyl ether group has the formula $-O-CH_2-CH=CH_2$ which attached to an aromatic group. In summary, $-O-CH_2-CH=CH_2$ is not a vinyl ether group.

Furthermore, claim 23 is amended such that the charge transport material of the currently amended claim 23 comprises only one functional group having a vinyl group. The amendment is supported by the specification, for example, Compounds (2) and (3) at page 20, lines 9-10. The charge transport materials, particularly compound 242, of Kikuchi comprise at least two chain-polymerization functional groups. See the abstract, the paragraph at col. 3, line 4 to col. 4, line 34; and the paragraph at col. 5, lines 6-11 of Kikuchi. In conclusion, Compound 242 is not within the compositional limitation of the formula recited in instant claim 23 because (1) the group $-O-CH_2-CH=CH_2$ in Compound 242 of Kikuchi is an allyl ether group and not a vinyl ether group; and (2) the charge transport material of the currently amended claim 23 comprises only one functional group having a vinyl group.

In view of the above comments, Applicants respectfully request withdrawal of the rejection to claim 23 under 35 U.S.C. § 102(b) as being anticipated by Kikuchi (U.S. Pat. No. 6,416,915).

Claim Rejection under 35 U.S.C. § 103

A) Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi. The Examiner noted that (1) Kikuchi discloses the hole transport hydrazone Compound 242 at cols. 81-82 is represented by formula (5) where R^{14} is a phenyl group p-substituted with an $-O-CH_2-CH=CH_2$ group; (2) Kikuchi does not exemplify a compound having the formula recited in instant claim 24 where X is a $-CH_2-CH_2-$ group; and (3) the group R^{14} in Formula (5) can denote an "alkyl group, aralkyl group, or aryl group, each capable of having a substituent, or a hydrogen atom." The Examiner asserted that it would be obvious to a person

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skill in the art to replace the phenyl group that is p-substituted with an $-O-CH_2-CH=CH_2$ group in Compound 242 with an ethylene group that is substituted with an $-O-CH=CH_2$ group.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143.

Claim 24 depends on claim 23. Claim 23 is amended such that the charge transport material of the currently amended claim 23 comprises only one functional group having a vinyl group. Kikuchi teaches charge transport materials comprising at least two chain-polymerization functional groups. See the abstract, the paragraph at col. 3, line 4 to col. 4, line 34; and the paragraph at col. 5, lines 6-11 of Kikuchi. After the amendment, the cited reference, Kikuchi, does not teach, suggest, or provide an incentive for the modification of the prior art reference to provide all the limitations, particularly the limitation that the charge transport material of the currently amended claim 23, and thus claim 24, comprises only one functional group having a vinyl group. Therefore, the instant claim 24 is not obvious under 35 U.S.C. § 103(a) over Kikuchi under 35 U.S.C. § 103(a).

In view of the above comments, Applicants respectfully request withdrawal of the rejection to claim 24 under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi (U.S. Pat. No. 6,416,915).

B) Claims 24 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi. The Examiner noted that (1) Kikuchi discloses the hole transport hydrazone Compound 242 at cols. 81-82 is represented by formula (5) where R^{14} is a phenyl group p-substituted with an $-O-CH_2-CH=CH_2$ group; (2) Kikuchi does not exemplify a compound having the formula recited in instant claim 25 where X is a $-CH_2-CH_2-$ and V is $-O-CH=CH_2$; (3) the group R^{14} in Formula (5) can denote an "alkyl group, aralkyl group, or aryl group, each capable of having a substituent, or a hydrogen atom;" and (4) Kikuchi also teaches that the chain-polymerization functional group can be $-CH_2-O-CH=CH_2$. The Examiner asserted

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that it would be obvious to a person skill in the art to replace the phenyl group that is p-substituted with an $-O-CH_2-CH=CH_2$ group in Compound 242 with a methyl group that is substituted with a $-CH_2-O-CH=CH_2$ group.

Claim 25 depends on claim 24 which in turn depends on claim 23. Claim 23 is amended such that the charge transport material of the currently amended claim 23 comprises only one functional group having a vinyl group. Kikuchi teaches charge transport materials comprising at least two chain-polymerization functional groups. See the abstract, the paragraph at col. 3, line 4 to col. 4, line 34; and the paragraph at col. 5, lines 6-11 of Kikuchi. After the amendment, the cited reference, Kikuchi, does not teach, suggest, or provide an incentive for the modification of the prior art reference to provide all the limitations, particularly the limitation that the charge transport materials of the currently amended claim 23, and thus of claims 24 and 25, comprise only one functional group having a vinyl group. Therefore, the instant claims 24 and 25 are not obvious under 35 U.S.C. § 103(a) over Kikuchi under 35 U.S.C. § 103(a).

In view of the above comments, Applicants respectfully request withdrawal of the rejection to claims 24 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi (U.S. Pat. No. 6,416,915).

Allowable Subject Matter

Claims 1, 2, 4-9, 11-16 and 18-22 were indicated allowable over the prior art of record. Claims 3, 10 and 17 were indicated allowable if rewritten or amended to overcome the claim informality objection set forth in the office action. The claim informalities " $O-CH_2=CH_2$ " in claims 3, 10, and 17 are corrected to " $O-CH=CH_2$." Claim 26 was objected to as being dependent upon a rejected base claim, but was indicated allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 26 depends on claim 23. The currently amended claim 23 is allowable for the reasons mentioned above, and therefore, claim 26 is allowable in its current dependent form.

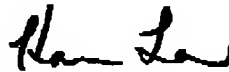
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CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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